OIPE

RAW SEQUENCE LISTING   DATE: 02/12/2002
PATENT APPLICATION: US/10/053,192 TIME: 15:34:11

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  3 <110> APPLICANT: BACHMANN, Heinrich
  4         BRUGGER, Roland
  5         FRIEDLEIN, Arno M
  6         WIRTZ, Gabriele M
  7         WOGGON, Wolf-Dietrich
  8         WYSS, Adrian
  9         WYSS, Markus
 11 <120> TITLE OF INVENTION: BETA,BETA-CAROTENE 15,15'-DIOXYGENASES, NUCLEIC ACID
 12         SEQUENCES CODING THEREFOR AND THEIR USE
 14 <130> FILE REFERENCE: B,B-CAROTENE 15,15'-DIOXYGENASES,...
C--> 16 <140> CURRENT APPLICATION NUMBER: US/10/053,192
C--> 17 <141> CURRENT FILING DATE: 2002-01-15
 19 <150> PRIOR APPLICATION NUMBER: 103382.0
 20 <151> PRIOR FILING DATE: 1999-02-22
 22 <160> NUMBER OF SEQ ID NOS: 10
 24 <170> SOFTWARE: PatentIn Ver. 2.1
 26 <210> SEQ ID NO: 1
 27 <211> LENGTH: 526
 28 <212> TYPE: PRT
 29 <213> ORGANISM: CHICKEN
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 36               20                  25                  30
 38 Leu Arg Asn Gly Pro Gly Met His Thr Ile Gly Asp Thr Lys Tyr Asn
 39               35                  40                  45
 41 His Trp Phe Asp Gly Leu Ala Leu Leu His Ser Phe Thr Phe Lys Asn
 42           50                  55                  60
 44 Gly Glu Val Tyr Tyr Arg Ser Lys Tyr Leu Arg Ser Asp Thr Tyr Asn
 45   65                  70                  75                  80
 47 Cys Asn Ile Glu Ala Asn Arg Ile Val Val Ser Glu Phe Gly Thr Met
 48               85                  90                  95
 50 Ala Tyr Pro Asp Pro Cys Lys Asn Ile Phe Ala Lys Ala Phe Ser Tyr
 51               100                 105                 110
 53 Leu Ser His Thr Ile Pro Glu Phe Thr Asp Asn Cys Leu Ile Asn Ile
 54           115                 120                 125
 56 Met Lys Thr Gly Asp Asp Tyr Tyr Ala Thr Ser Glu Thr Asn Phe Ile
 57           130                 135                 140
 59 Arg Lys Ile Asp Pro Gln Thr Leu Glu Thr Leu Asp Lys Val Asp Tyr
 60 145                 150                 155                 160
 62 Ser Lys Tyr Val Ala Val Asn Leu Ala Thr Ser His Pro His Tyr Asp
 63               165                 170                 175
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69          195             200             205
71 Glu Lys Lys Lys Ser Cys Phe Lys His Leu Glu Val Val Cys Ser Ile
72     210             215             220
74 Pro Ser Arg Ser Leu Leu Gln Pro Ser Tyr Tyr His Ser Phe Gly Ile
75 225             230             235             240
77 Thr Glu Asn Tyr Ile Val Phe Ile Glu Gln Pro Phe Lys Leu Asp Ile
78             245             250             255
80 Val Lys Leu Ala Thr Ala Tyr Ile Arg Gly Val Asn Trp Ala Ser Cys
81          260             265             270
83 Leu Ser Phe His Lys Glu Asp Lys Thr Trp Phe His Phe Val Asp Arg
84          275             280             285
86 Lys Thr Lys Lys Glu Val Ser Thr Lys Phe Tyr Thr Asp Ala Leu Val
87     290             295             300
89 Leu Tyr His His Ile Asn Ala Tyr Glu Glu Asp Gly His Val Val Phe
90 305             310             315             320
92 Asp Ile Val Ala Tyr Arg Asp Asn Ser Leu Tyr Asp Met Phe Tyr Leu
93             325             330             335
95 Lys Lys Leu Asp Lys Asp Phe Glu Val Asn Asn Lys Leu Thr Ser Ile
96          340             345             350
98 Pro Thr Cys Lys Arg Phe Val Val Pro Leu Gln Tyr Asp Lys Asp Ala
99          355             360             365
101 Glu Val Gly Ser Asn Leu Val Lys Leu Pro Thr Ser Ala Thr Ala Val
102      370             375             380
104 Lys Glu Lys Asp Gly Ser Ile Tyr Cys Gln Pro Glu Ile Leu Cys Glu
105 385             390             395             400
107 Gly Ile Glu Leu Pro Arg Val Asn Tyr Asp Tyr Asn Gly Lys Lys Tyr
108             405             410             415
110 Lys Tyr Val Tyr Ala Thr Glu Val Gln Trp Ser Pro Val Pro Thr Lys
111             420             425             430
113 Ile Ala Lys Leu Asn Val Gln Thr Lys Glu Val Leu His Trp Gly Glu
114          435             440             445
116 Asp His Cys Trp Pro Ser Glu Pro Ile Phe Val Pro Ser Pro Asp Ala
117      450             455             460
119 Arg Glu Glu Asp Glu Gly Val Val Leu Thr Cys Val Val Val Ser Glu
120 465             470             475             480
122 Pro Asn Lys Ala Pro Phe Leu Leu Ile Leu Asp Ala Lys Thr Phe Lys
123             485             490             495
125 Glu Leu Gly Arg Ala Thr Val Asn Val Glu Met His Leu Asp Leu His
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135 <213> ORGANISM: CHICKEN
137 <400> SEQUENCE: 2
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140 cacaggagag cgatggagac aatatttaac agaaacaaag aagagcatcc agagcccata 180
141 aaagctgagg tgcaaggtca gttgcccact tggttgcaag gggtacttct ccgaaatggc 240
142 ccagggatgc acacaatagg ggacactaaa tacaaccact ggtttgatgg cttggctctg 300
143 ctgcacagct tcacgtttaa aaatggtgaa gtttactaca gaagtaagta cctccgaagt 360
144 gacacataca actgcaatat agaagcaaac cgaatcgtgg tgtctgagtt tggaaccatg 420
145 gcttatccgg atccatgcaa aaacatattt gccaaggcat tctcatactt atctcacacc 480
146 attcctgagt tcacggacaa ctgcctgatc aacattatga aaactgggga tgattattat 540
147 gctaccagtg agactaactt catcagaaaa attgatccac agactctgga gacactagat 600
148 aaggtagact acagcaaata tgtagctgta aacttggcaa cttctcaccc acactatgac 660
149 agtgctggaa atattctcaa catgggtact tcaattgttg ataaagggag aacaaaatat 720
150 gttctcttta agatcccttc ctctgtacca gaaaaagaaa agaagaaatc ttgttttaaa 780
151 cacctggaag tagtatgctc catcccttct cgctccctgc tccaaccaag ctactaccac 840
152 agctttggaa tcacagaaaa ttatattgtg ttcatagagc agccatttaa actggatatt 900
153 gtcaaactgg caactgccta catccgaggt gtgaactggg cttcctgcct ttcctttcat 960
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155 aagtttttaca ctgatgcttt ggtgctttat caccacataa atgcttacga agaagatggc 1080
156 cacgttgttt ttgatatcgt tgcctacaga gacaatagct tgtacgatat gttttactta 1140
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161 aagtatgtct atgcaacaga agtccagtgg agcccagttc ctacaaagat tgcaaaactg 1440
162 aatgtccaaa caaaggaagt actgcactgg ggagaagacc actgctggcc ctcagagccc 1500
163 atctttgttc ccagccccga tgcaagagaa gaggatgaag gtgttgtttt gacctgtgtt 1560
164 gtggtgtctg agccaaataa agcacccttc ctactcatct tggatgctaa aacattcaaa 1620
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166 ccacagaatg atttgggggc tgagacggaa taaaacgcta ttgatccgac tacacaaact 1740
167 gagacaactt tctactgaac atgagttaat atcccttta ccattcaaga acaaccatat 1800
168 aacgacacaa aatgactatg tataatctct taaataatag atataatcct tttaaggcac 1860
169 agcgatgagt tttactacag gtaacgatat gcacaactgg catataacta ttccaaaaga 1920
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175 accaaagtta agtattacat tcaggtgcta caactttcta atttacaacc gaaacaaaca 2280
176 agcaaacagc acttgctttg ctaataaccc catggtgtat ttttcctttt tatgatgaca 2340
177 aaaccaagta catatggttt tatgtagcat tcaattatac ttcagtgcta ttccatccta 2400
178 atgttataag caatttgtat ttaaatcagt tttccttgag aatatctgac ataacatttt 2460
179 gtgtaatgag atgactatgt tgtctaaaga tgaacaggaa tgtatctttt attagtattg 2520
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183 atgtgacacc acgctgtttg ggtatctctc actttcacat acctgttctc atggtttctg 2760
184 ctactcactg tattttgcag gagagaaaca aaatgaaatc actgtcactt actatcgccc 2820
185 catcacataa gaacaatggg gctttggtga cttgttcatg attacataag atgtttgcag 2880
186 cagagcagca atagaaccaa caccatccac agttcttgct tgctctgtta tgactccctt 2940
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Output Set: N:\CRF3\02122002\J053192.raw

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188  cactggggtc agatctagag cttaagtaag cagtctgggg ttttcaaatg tttatatgtt 3060
189  ccataaaatg gaaataaaca cctccataat aaaaaaaaaa aaaaaaaaaa a          3111
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194  <212> TYPE: PRT
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204  <212> TYPE: PRT
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212               20                  25                  30
214  Ile Gly Asp Thr Lys Tyr Asn His Trp Phe Asp Gly Leu Ala Leu Leu
215           35                  40                  45
217  His Ser Phe Thr Phe Lys Asn Gly Glu Val Tyr Tyr Arg Ser Lys Tyr
218       50                  55                  60
220  Leu Arg Ser Asp Thr Tyr Asn Cys Asn Ile Glu Ala Asn Arg Ile Val
221   65                  70                  75                  80
223  Val Ser Glu Phe Gly Thr Met Ala Tyr Pro Asp Pro Cys Lys Asn Ile
224               85                  90                  95
226  Phe Ala Lys Ala Phe Ser Tyr Leu Ser His Thr Ile Pro Glu Phe Thr
227               100                 105                 110
229  Asp Asn Cys Leu Ile Asn Ile Met Lys Thr Gly Asp Asp Tyr Tyr Ala
230           115                 120                 125
232  Thr Ser Glu Thr Asn Phe Ile Arg Lys Ile Asp Pro Gln Thr Leu Glu
233       130                 135                 140
235  Thr Leu Asp Lys Val Asp Tyr Ser Lys Tyr Val Ala Val Asn Leu Ala
236  145                 150                 155                 160
238  Thr Ser His Pro His Tyr Asp Ser Ala Gly Asn Ile Leu Asn Met Gly
239               165                 170                 175
241  Thr Ser Ile Val Asp Lys Gly Arg Thr Lys Tyr Val Leu Phe Lys Ile
242               180                 185                 190
244  Pro Ser Ser Val Pro Glu Lys Glu Lys Lys Lys Ser Cys Phe Lys His
245               195                 200                 205
247  Leu Glu Val Val Cys Ser Ile Pro Ser Arg Ser Leu Leu Gln Pro Ser
248       210                 215                 220
250  Tyr Tyr His Ser Phe Gly Ile Thr Glu Asn Tyr Ile Val Phe Ile Glu
251  225                 230                 235                 240
253  Gln Pro Phe Lys Leu Asp Ile Val Lys Leu Ala Thr Ala Tyr Ile Arg
254               245                 250                 255
256  Gly Val Asn Trp Ala Ser Cys Leu Ser Phe His Lys Glu Asp Lys Thr
257               260                 265                 270
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259 Trp Phe His Phe Val Asp Arg Lys Thr Lys Lys Glu Val Ser Thr Lys
260         275             280             285
262 Phe Tyr Thr Asp Ala Leu Val Leu Tyr His His Ile Asn Ala Tyr Glu
263     290             295             300
265 Glu Asp Gly His Val Val Phe Asp Ile Val Ala Tyr Arg Asp Asn Ser
266 305             310             315             320
268 Leu Tyr Asp Met Phe Tyr Leu Lys Lys Leu Asp Lys Asp Phe Glu Val
269             325             330             335
271 Asn Asn Lys Leu Thr Ser Ile Pro Thr Cys Lys Arg Phe Val Val Pro
272             340             345             350
274 Leu Gln Tyr Asp Lys Asp Ala Glu Val Gly Ser Asn Leu Val Lys Leu
275         355             360             365
277 Pro Thr Ser Ala Thr Ala Val Lys Glu Lys Asp Gly Ser Ile Tyr Cys
278     370             375             380
280 Gln Pro Glu Ile Leu Cys Glu Gly Ile Glu Leu Pro Arg Val Asn Tyr
281 385             390             395             400
283 Asp Tyr Asn Gly Lys Lys Tyr Lys Tyr Val Tyr Ala Thr Glu Val Gln
284             405             410             415
286 Trp Ser Pro Val Pro Thr Lys Ile Ala Lys Leu Asn Val Gln Thr Lys
287         420             425             430
289 Glu Val Leu His Trp Gly Glu Asp His Cys Trp Pro Ser Glu Pro Ile
290         435             440             445
292 Phe Val Pro Ser Pro Asp Ala Arg Glu Glu Asp Glu Gly Val Val Leu
293     450             455             460
295 Thr Cys Val Val Val Ser Glu Pro Asn Lys Ala Pro Phe Leu Leu Ile
296 465             470             475             480
298 Leu Asp Ala Lys Thr Phe Lys Glu Leu Gly Arg Ala Thr Val Asn Val
299             485             490             495
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302         500             505
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306 <211> LENGTH: 529
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308 <213> ORGANISM: BOVINE
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315             20             25             30
317 Phe Glu Val Gly Ser Glu Pro Phe Tyr His Leu Phe Asp Gly Gln Ala
318             35             40             45
320 Leu Leu His Lys Phe Asp Phe Lys Glu Gly His Val Thr Tyr His Arg
321         50             55             60
323 Arg Phe Ile Arg Thr Asp Ala Tyr Val Arg Ala Met Thr Glu Lys Arg
324   65             70             75             80
326 Ile Val Ile Thr Glu Phe Gly Phe Thr Thr Cys Ala Phe Pro Asp Pro
327             85             90             95
329 Cys Lys Asn Ile Phe Ser Arg Phe Phe Ser Tyr Phe Arg Gly Val Glu
330             100             105             110
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VERIFICATION SUMMARY   DATE: 02/12/2002
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L:17 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:454 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8
L:476 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9